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THE ROLE OF AGE IN SECOND/FOREIGN LANGUAGE ACQUISITION

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ABSTRACT. The article starts with the traditional notion of the critical period hypothesis (Lenneberg) showing its limitations as the only explanation of children being better language learners than adults. The latter portions are devoted to the description and interpretation of variety of studies which show different factors responsible for the fact that children are not necessarily superior acquirers to adults. The decisive factors causing the differences between the two groups are: 1. physical, cognitive and psychological differences, 2. different conditions in which they acquire a language, 3. different inputs they are exposed to.

The age of the learner is one of the most important factors deciding about the degree of success in second and foreign learning and teaching.

It has been known for a long time that children acquire language faster and better than adults. This belief, however, is not very precise and only within the last 20 years has research concerning the problem of age in second language acquisition made it possible to see the complexity of the problem and made us aware of its many aspects.

In this presentation we would like to discuss some of those aspects and present the results of the most recent research.

The first important step concerning the role of age in second language acquisition was the research done by Penfield and Roberts (1959) and *the critical period hypothesis* presented by Lenneberg (1967).

Penfield and Roberts (1959) found out that children have a unique capacity to shift linguistic abilities to the right hemisphere and restore them after the left one has been damaged. In the case of adult aphasiacs this shifting does not occur. They are neither able to restore linguistic abilities in the right hemisphere nor to shift them from the left to the right hemisphere in the same degree as children. Penfield and Roberts claimed that this plasticity of the brain ends at the age of ten and recommended that this information be utilized in second/foreign language teaching, i.e. the process of teaching should start before that age.

After having analyzed the results of research in different fields, e.g. neurology, aphasia, psychological disorders, etc., Lenneberg (1967) presented his *critical period hypothesis*. He claimed that linguistic functions exist in both hemispheres in new-born infants. Then, during the linguistic development of a child, the left hemisphere takes them over. Only in this period of development is a child able to acquire a language naturally and without accent. This period lasts from the age of two to puberty and is called lateralization.

Lenneberg's critical period hypothesis was later analyzed by Krashen (1973) who found out that the data which had been used by Lenneberg (Basser's studies) concerned children younger than five and that lateralization is probably finished at the age of four. Krashen's scepticism is supported by the results of experiments on dichotic hearing conducted with children between the ages of 4 and 9. In these experiments the subjects were exposed to language material and the superiority of the right ear was established. It was proved that as early as the age of four lateralization is completed, since left hemisphere dominance manifested by right ear superiority is shown in language data on subjects between ages four and nine.

The next argument against the critical period hypothesis is the fact that natural language acquisition does take place after puberty. The famous case of Genie is one of the most recent examples (Fromkin et al 1974). Genie was isolated from her environment until she was 13 years old. She was not exposed to any language until then, so she was completely mute. When she was found it was established that she had suffered neither brain damage nor psychological deviations. The results of tests on dichotic hearing indicated that Genie's linguistic and non-linguistic abilities were placed in the right hemisphere. Genie's left hemisphere was not stimulated linguistically early enough to accept language functions. When she was finally exposed to English her language development was more or less normal and her serious problems concerned pronunciation and the control of the organs of speech.

Genie's case proves that natural language acquisition is possible after puberty and that language functions do not necessarily have to be in the domain of the left hemisphere.

The experiments of Asher and Garcia (1963) concentrated on another aspect of age in second language acquisition. They studied the English pronunciation of Cuban immigrant children in comparison with their native American schoolmates and concluded that the degree of nativeness of their pronunciation depended first of all on their age of arrival in the United States. Length of stay was only an additional factor. The table below describes the results of the experiment.

- A - native
- B - near native
- C - slight accent
- D - definite accent

Child's age when
entering the
United States

Length of time
in the United States

1-6	1-4 yrs. (N=2)	B	50%
	5-8 yrs. (N=7)	B	71%
	1-4 yrs.	C	50%
	5-8 yrs.	C	29%
	1-4 yrs.	D	
	5-8 yrs.	D	
7-12	1-4 yrs. (N=9)	B	22%
	5-8 yrs. (N=28)	B	46%
	1-4 yrs.	C	45%
	5-8 yrs.	C	43%
	1-4 yrs.	D	33%
	5-8 yrs.	D	11%
13-19	1-4 yrs. (N=9)	B	0%
	5-8 yrs. (N=6)	B	17%
	1-4 yrs.	C	11%
	5-8 yrs.	C	50%
	1-4 yrs.	D	89%
	5-8 yrs.	D	33%

Note: The A category for native pronunciation was 0% in all cases.
English pronunciation as a function of entry and length of time in the United States.

The experiments of Fathman (1975) brought similar results. She studied two age groups of immigrant children with different native languages. The group including children between ages 6 and 15 acquired American pronunciation much faster and better than the one with children between 11 and 15 years old.

An experiment by Oyama (1976) with 60 Italian immigrants shows that it was the subjects' age of arrival in the United States more than the length of their stay in the United States which influenced their understanding of a text recorded with different types of interference. The subjects were divided into three groups according to the age at which they entered the United States:

- 6 - 10 years old
- 11 - 15 years old
- 16 - 20 years old.

The immigrants who arrived before age 11 did better than others in recognizing sentences obstructed by interference.

The experiments of Asher and Garcia (1969), Fathman (1975), and Oyama (1976) do support the critical period hypothesis with reference to pronunciation. The earlier one is exposed to L₂ pronunciation the better or the better and faster he acquires it.

Opposite results are provided by the experiments described below.

Olson and Samuels (1973) conducted an experiment with three 20-subject groups, teaching the pronunciation of 33 German phonemes for a period of three weeks. The learners from group II (14 - years old) and those from group III (18 - 26 years old) achieved better pronunciation than those from group I (9.5 - 10.5 years old).

Olson and Samuels suggest that in learning situations where both children and adults are exposed to the same conditions, adults achieve better results. It is only in the natural acquisition situation when children are better. Here they are usually exposed to their L_2 with more intensity and frequency than adults. Adults usually live in ethnic ghettos and are not exposed to L_2 structures with the same intensity.

Snow and Hoefnagel-Hohle (1977) investigated the acquisition of Dutch pronunciation in natural conditions by 51 English speakers. The best results in their experiment were achieved by adolescents between 12 and 15 years old and the poorest ones by the youngest group consisting of children between 3 and 5 years old.

These two experiments bring results opposite to critical period hypothesis expectations. In the case of Olson's and Samuels' study we can classify it as a study of learning (versus acquisition) processes. The study by Snow and Hoefnagel-Höhle investigates the acquisition processes in natural conditions and that is why it is a serious argument against Lenneberg's thesis. However, there are many more works which support the critical period hypothesis (e.g. Oyama 1973, Seliger, Krashen, Ladefoged 1974) but there is no need to discuss them here in detail.

The acquisition of L_2 pronunciation is not only controlled by neurolinguistic processes but also by purely physical ones. Second and foreign language sounds and their combinations are produced by learner's speech organs. Involved in pronunciation are hundreds of muscles which produce about 14 sounds a second. Their plasticity and efficiency directly influence the quality of speech produced. The muscles of speech organs undergo the same physiological processes as other human muscles. They are easier to shape in young individuals than in older ones, i.e., it is easier to learn new muscle movements when one is young and it is much harder to reshape them when one is old.

In studying the speech of language learners, it is difficult to decide to what extent their pronunciation is influenced by their neurolinguistic state, of development and to what extent by the physical state of their speech organs.

There is, however, much more to language than its pronunciation. We will now look briefly at some studies concerning morphology and syntax.

One of the earliest works which investigated the acquisition of syntax and morphology from the point of view of the critical period was that by Fathman (1975). Her conclusions were that older children acquired morphology and syntax faster than younger children. She suggested that there may be different critical periods for the different aspects of language.

The works by Asher and Price (1967), Ervin-Tripp (1974) show that the best age for syntax and morphology is between ages 11 and 15. Teenagers have a better

memory span than children and they organize their memory better. Their semantic system in L_1 is much fuller, so when learning L_2 their only effort is to learn the syntactic representation of that system. Children, on the other hand, have to develop two systems simultaneously. Also, after having been at school for several years teenagers handle testing techniques better. Their ability to generate grammatical rules and their ability to make associations are better than those of children.

In learning situations (in school conditions) teenagers are more successful than children. Children, however, are thought to be superior in natural acquisition situations.

Asher and Garcia (1969) conducted an interesting experiment creating natural conditions of acquisition for both children and adult subjects, teaching them Russian structures. The results show that adult subjects achieved better results and the authors claim that in the same conditions adults are better than children and that usually adult learners are taught in different (worse) conditions than children.

It is often suggested that children are exposed to simpler input and that is why they learn (acquire) faster. An experiment by Scarcella and Higa (1982) investigated the differences between the input children receive when they acquire a second language and the input adult learners are exposed to during their process of acquisition. The results of the experiment confirmed that children are exposed to simpler input and that they receive many more reinforcements than adults. Repetitions, exaggerated intonation, and special gestures appeared in children's input and they were rare in the input adult learners received.

According to Krashen (1978, 1980a, 1980b) the "optimal" input has to be:

- 1) sufficient in quantity
- 2) given in a non-threatening atmosphere
- 3) both attended to and understood by the language learner
- 4) at an appropriate level (just a little beyond the learner's current linguistic competence).

Both children's and adult learner's input has to fulfil the above conditions to be utilized in the acquisition process.

Adults when exposed to an inappropriate input know how to deal with the situation. They know techniques to elicit proper input from the speakers around them (asking questions, acting puzzled, etc.). Children usually do not know how to make their environment aware that the input is too difficult or too easy. Adults know the strategies of communication from their L_1 and they use them with great success while learning L_2 . According to Krashen, this is one of the most important reasons that adults are better learners than children.

Someone who starts learning a second language as a two-year old child and continues it until he/she is 20, achieves a level of competence which is not much higher than another person who starts learning at 16 and continues for about six years in proper conditions and with high motivation. This fact is well known in general education. Adult illiterates need 300 - 1000 hours to cover the program of

American grades 1 - 8. Children need about 9000 hours for the same education.

How can one explain, then, the well known fact that immigrant children learn a second language better and faster than their parents? There are at least two reasons: the conditions in which those two groups learn L_2 and their motivation.

Children integrate with their L_2 peers without any prejudices and they stay with them most of the day. Parents, however, protect their linguistic past, their L_1 , with great care. They usually live in ethnic ghettos and do not have opportunities to speak the new language.

In our civilization linguistic behavior reflects the speaker's social class, professional group, the geographical area he comes from, etc. The adult speaker is aware of the identification function of language. When learning L_1 this awareness is a great obstacle to integrating with L_2 speakers. An adult does not want to sound like someone who comes from a low social class or a professional group with low prestige. With this kind of attitude the solution is to avoid contacts with L_2 , and adult learners very often choose this alternative.

The work of Schumann (1978) proves that one condition for fully acquiring L_2 is to integrate with L_2 speakers. For adults this is a very difficult process. In spite of the fact that the majority of people in Western civilization live in bilingual situations, only one language is considered the native, first or mother tongue. Since the Renaissance language has served as a criterion for identifying a nation, culture and tradition. Adult learners, especially educated adult learners, start their language education with the awareness that the code they are about to acquire serves as their identification with a French, German or English tradition. They do not identify themselves with the L_2 tradition and they do not want to. Some purposefully preserve their L_1 accent to show their origin and their identity as outsiders. With this kind of attitude it is hardly possible to expect complete acquisition of L_2 . Children are not aware of the above language functions while acquiring L_2 . They are not even aware that they deal with a new language. Their attitudes to L_2 are much more relaxed.

Adult learners can have a positive identification with a second language. An example from outside our civilization is described by Sorenson (1967). He studied the Tukano, a South American tribe, who speak over 20 languages. According to tradition young Tukano males have to marry women from outside their villages who speak different languages. It is a normal thing for a Tukano male to learn a second language when is mature. The acquisition process takes place without any hesitation and without the negative attitudes characteristic of our civilization and, according to Sorenson, it is completely successful.

The problem of age in second and foreign language acquisition has, then, at least four aspects:

- 1) neurolinguistic
- 2) physical
- 3) psychological (cognitive and psycholinguistic)
- 4) sociolinguistic (cultural)

Neurolinguistic and physical plasticity influences good pronunciation. Cognitive development helps in understanding semantic and syntactic relations and their understanding in turn helps acquisition. The attitude towards the language to be acquired either facilitates the process or slows it down. The learner's L₂ competence is influenced by all these factors in different degrees.

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